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IN THE CASE OF AN ON-ORBIT SERVICING MISHAP, A STUDY OF INVESTIGATION, INSURANCE, AND LIABILITY

Abstract

In response to an increasingly congested and contested space domain, on-orbit servicing companies have answered with space-tested technologies and fair and accessible business plans to clean up our orbits or extend the life of existing satellites. Mission life extension and active debris removal are critical technologies and services for preventing orbits from reaching carrying capacity and the foreboding Kessler Syndrome. While these businesses are ready to go, the funding, licensing, spectrum, and insurance infrastructure are not ready to back them up to perform their mission. The challenges associated with these key functions are addressed, along with an assessment of the Liability Convention, specifically pertaining to on-orbit servicing missions. There have been many explorations of the legal concept of the "Launching State," given that it was not written for the current circumstance of global commercial markets working together, and has not been thoroughly challenged in an international court. Many space vehicles have associated insurance packages, sometimes from multiple underwriters, and are traditionally built for a single spacecraft. Providing insurance for constellations is still considered novel, and insuring a multi-national on-orbit servicing mission is unheard of. Case studies of potential on-orbit servicing mishaps, their investigations, insurance coverages, contracts, and liability deliberations are presented, along with an overview of applicable laws and risk analysis techniques. Finally, a summary of recommendations is provided for incentives that could be administered at the international and State level in support of satellite operators utilizing on-orbit servicing spacecraft to promote a more sustainable space environment.